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SOUTH PACIFIC COMMISSION

COCONUT HISPINE BEETLE

Top left: *Adult beetles in spear leaf.*
Top right: *Larvae in spear leaf.*
Bottom: *Damage to young palm.*

The **COCONUT HISPINE BEETLE** *(Brontispa longissima)* is an important pest of coconut and other palm trees. It is also known as the brontispa beetle, brontispa leaf hispid, coconut leaf hispa, coconut leaf hispine, coconut hispid, and palm leaf beetle.

This beetle is native to Melanesia from Java to Vanuatu, but has spread in recent years to some other islands and to Northern Australia. Within the South Pacific Commission region, it is known from American Samoa, French Polynesia, New Caledonia, Papua New Guinea, Solomon Islands, Vanuatu, and Western Samoa. Several other species of *Brontispa* occur in the region.

HOSTS

Coconut *(Cocos nucifera)* is the principal host, but betel palm *(Areca catechu)*, sago *(Metroxylon sagu)* and some other native and ornamental palms are also attacked.

DESCRIPTION

The adult is an elongate, narrow beetle, 7–10 mm long and 2 mm wide (Fig. 4). It is very flat and has short legs so is well adapted to living between the closely spaced leaflets of young coconut fronds. The colour may vary from yellowish-red to black, but typically the beetle is coloured as shown on front cover, and on page 4.

Fig. 1: Brontispa *eggs (x10).*

The eggs are about 1 mm long and are brownish in colour (Fig. 1). They are often placed end to end in short rows and are surrounded by debris and frass produced by the feeding of the adults.

The larvae are yellowish and are also flattened (Fig. 2). At the end of the abdomen is a pair of curved appendages (arrowed). When fully grown they are about 10 mm long.

The pupae are similar to the larvae, but are slightly larger and darker. They show the developing legs and wings of the adult (Fig. 3).

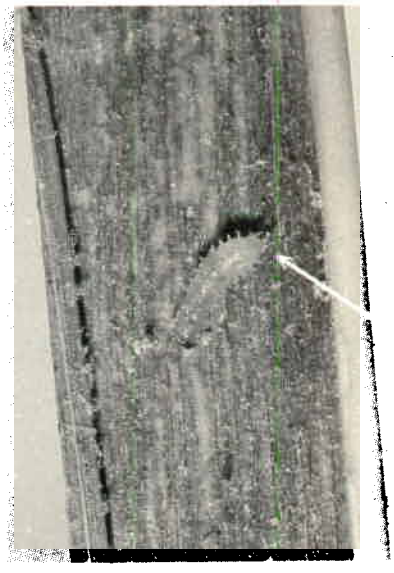

Fig. 2: Brontispa *larva (note curved appendages on tail — arrowed) (x1¾).*

DAMAGE

Both adults and larvae damage the leaflets of young unopened fronds. They eat away the surface tissues in streaks, which are usually parallel to the midrib. When the leaflets separate, as the frond expands, the beetles move

to attack younger leaves. The narrow feeding scars enlarge to form irregular brown blotches as the frond opens. The brown patches shrivel and curl giving the leaf a typical, scorched, ragged appearance (front cover). The adults leave narrow linear chewing marks and cause less damage than the larvae.

Usually palms up to 4–5 years old are most heavily attacked. Because the leaves are larger in mature palms and because there may be more than one frond infested at any one time, the damage caused by the same number of beetles to such palms is relatively less than that to young palms. Occasionally, mature palms are severely attacked — this seems to happen soon after the beetle invades a new area though the amount of damage depends on the cultivar. Palms may be killed as the result of sustained attack by these beetles. Trees weakened by beetle damage are more vulnerable to drought and more susceptible to diseases.

Fig. 3: Brontispa *pupae (x3).*

LIFE-CYCLE

Eggs hatch after about 5 days. The number of larval instars varies from 3 to 6, and larval life is from 30–40 days. The pupal period is 5–6 days. After emerging from the pupa, there may be a period of 3–20 or more weeks before the female lays the first batch of eggs. From then on, egg masses are deposited regularly, about three times a week. Adults may live for 3–6 months, during which time a female may lay up to 100 eggs. The life-cycle (egg to egg) is variable in length, but 120 days is average. (The shortest generation time recorded is 64 days.) Typically, there are about three generations a year, but there is considerable overlapping and weather factors may affect development.

The beetle is capable of weak flight and as a consequence new infestations spread slowly, if not aided by human activities.

CONTROL

Biological Control

There are several natural enemies of the coconut leaf hispine, which are important in biological control. Chief among these is the parasitic wasp, *Tetrastichus brontispae*. This wasp is native to Java but has been widely introduced in the Pacific Islands for control of *Brontispa* species. The wasp parasitises the larval and pupal stages. A much smaller wasp, *Trichogrammatoidea nana*, is an egg parasite of *Brontispa* as well as of several other coconut pests. It is native to Java and has been introduced to Fiji, Papua New Guinea and Solomon Islands. Another egg parasite, *Hispidophila (= Haeckeliana) brontispae*, from Indonesia and Malaysia, has also been introduced as a parasite of *Brontispa* species. The green muscardine fungus, *Metarhizium anisopliae*, can infest the larvae, pupae and adults and kill them. It may be an important controlling agent in dense populations during wet spells.

The black earwig, *Chelisoches morio*, and geckoes and skinks (and tree frogs where found) are predators of beetles and, possibly, larvae, but normally are unable to control infestations.

Chemical Control

Though natural enemies of the coconut leaf hispine may control the beetle in some situations, it may still become a pest in certain areas and can be particularly damaging in coconut nurseries. Also if an area is newly infested, damage to palms may be severe. Chemical control may be required in these situations.

For control of coconut leaf hispines on young palms, carbaryl* may be used. A rate of 1.25 gm of 80 per cent wettable powder per litre of water is recommended. To the dilute solution a few drops of a wetting agent should be added to help the chemical penetrate into the crevices of the young leaves. This mixture can be applied by a watering can to seedling palms or sprayed onto the *young* leaves and spears of small palms. To aid penetration the spear should be slightly bent and twisted (so as to expose the leaflets) using a *gloved* hand. Spraying should be repeated one week later for the larvae hatching during that period. After this, only palms on which large numbers of beetles are found need to be sprayed. In coconut nurseries, palms are generally inspected every 7–14 days and treated when necessary. A dye is used to mark those palms treated.

Fig. 4: *Adult beetle (note mites on body surface) (x5).*

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*Alternatively, trichlorfon or lindane at 0.1 per cent as a wash or spray.

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